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Remnant Prairie Plots of Benton County, Arkansas

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GENERAL NOTES

ADDENDUM TO "FISHES OF THE FOURCHE RIVER IN NORTH-CENTRAL ARKANSAS"

A preliminary list of the fishes of Fourche River has been reported (Bounds, S. M. and J. K. Beadles, 1976, Fishes of the Fourche River in northcentral Arkansas, Proc. Ark. Acad. Sci. 30:22-26). This list reported 94 species present within the river system. During the dry year of 1976, the low river stages made it possible for more intensive collections to be made in previously inaccessible areas. Six additional species were collected, and one species, although previously reported, was collected for the first time since 1945. The additional specimens were deposited in the Arkansas State University Museum.

A single specimen of *Notropis fumeus* Evermann was taken from the slow-moving, slightly turbid water of a dredged lowland ditch having a substrate of compacted clay. Green and Beadles (1974, Ichthyofaunal survey of the Current River within Arkansas, Proc. Ark. Acad. Sci. 28:22-26), Pflieger (1975, The fishes of Missouri, Mo. Dept. Cons., 343 pp.), and Yeager and Beadles (1976, Fishes of the Cane Creek Watershed in southeast Missouri and northeast Arkansas, Proc. Ark. Acad. Sci. 30:100-104) reported the ribbon shiner from Current River, Little Black River, and Cane Creek, respectively, from habitats similar to that mentioned above.

A single specimen of *Notropis rubellus* (Agassiz) was collected from the main channel of the river near its confluence with Black River. Pflieger (1975) reported the rosyface shiner as one of the most abundant and generally distributed minnows in the Ozark Uplands, and reported it from the Current and Eleven Point Rivers. However, no specimens were taken from the Ozark portion of Fourche.

Two specimens of *Noturus miurus* Jordan were collected from the riffle area of Fourche River near the State Highway 115 bridge. This collection site consisted of large rocks and swiftly flowing water, and was near the point where the Ozark foothills merged with the lowlands. The brindled madtom has been collected often in northeast Arkansas (Green and Beadles, 1974; Fowler, C.L. and G.L. Harp, 1974, Ichthyofaunal diversification and distribution in Jane's Creek watershed, Randolph County, Arkansas, Proc. Ark. Acad. Sci. 28:13-18; Robison, H. W. and J. K. Beadles, 1974, Fishes of the Strawberry River system of northcentral Arkansas, Proc. Ark. Acad. Sci. 28:65-70; Yeager and Beadles, 1976).

Pimephales tenellus (Girard), *Percina evides* (Jordan and Gilbert), and *Percina nasuta* (Bailey) were collected together from the lowland portion of the stream. The water was slightly turbid, slow-moving, and 0.8 m deep. The substrate was composed of mud and shifting sand that partially covered logs, small trees, and other debris. Robison and Beadles (1974) have reported all three species from the Strawberry River, a tributary to the Black River. Pflieger (1975) has reported all except *P. nasuta* from the Black River in Missouri. He reported the longnose darter as rare in Missouri and stated that it may be restricted to the upper St. Francis River. He only reported the Sabinae shiner from the Black River near Poplar Bluff where the river descends into the lowlands. He also reported the slim minnow as rare in the White River drainage. During this study two specimens of *Notropis sabinae*, two of *Pimephales tenellus*, one of *Percina evides*, and one of *P. nasuta* were collected.

The collection of *P. nasuta* affirms its presence in the Black River system. H. W. Robison (pers. comm.) has recently collected it from the Strawberry River, and T. M. Buchanan has collected it from the Spring River.

On 14 May 1977, a single specimen of *Hybopsis amblops* (Rafinesque) was collected. It was last collected prior to 1945 from Fourche River (Pflieger, 1975). This specimen was taken from a small clear Ozark pool having a substrate of coarse gravel. This collection reaffirms the presence of the bigeye chub in Fourche River.

With the addition of these six species to the previous list, the ichthyofauna reported from the Fourche River watershed is 100 species.

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REMNANT PRAIRIE PLOTS OF BENTON COUNTY, ARKANSAS

There are only two relatively undisturbed prairie plots remaining of the four major prairies described by Simonds and Hopkins (1891) for Benton County, Arkansas. These remnant plots are parts of Lindsley's Prairie which was formerly 5-6 miles long and over 4 miles wide, located in the southwest portion of the county, northeast of Siloam Springs. Each of these remnants is approximately 20 acres in size. The other prairies described by these geologists include Osage Prairie which extended about 10 miles in the area south of Bentonville. Beatie Prairie had an area of about 6 by 2 miles near Maysville in Arkansas and extended westward into Indian Territory. Round Prairie was in the western part of the county between Bloomfield and Cherokee City.

The two plots are Rice Prairie, 25 acres of the east part of the SE SE Section 33 T18N R33W, and the Stump Prairie, one mile north, which is 19½ acres in the W/2 SW SW Section 27 T18N R33W. Many of the same plant species are found on both plots, but diversity of habitats in the plots results in some ecological differences in the two areas.

Geologically, the prairies of northwest Arkansas are upland and lie on the Springfield Plateau, the portion of the Ozark Uplift underlain by the Boone limestone and chert of Mississippian age. The lime dissolves leaving a layer of chert mixed with clay. A characteristic of these prairies is the prairie mounds, sometimes called "pimple hills". Quinn (1968) states "Prairie mounds are low, naturally occurring hillocks, randomly distributed over level terrain". "Nonetheless, similarity in size, shape, orientation and distribution of prairie mounds, regardless of locality, suggests a common mode of origin—."

"Mounds range from 20-60 feet in diameter and from 2-8 feet high. They are slightly asymmetrical, somewhat elongated and steepened on the leeward side. All are similarly oriented. The pattern of distribution is random but in northwest Arkansas, the most abundant mounds, those composed completely of eolian, windblown material, occupy flat or level surfaces."

According to Quinn, the mounds are formed on a blanket of loessal material. Loess is rock ground to silt size particles by glaciers during their advances into the upper Mississippi Valley. Loess was carried southward away from the glaciers by water and wind. It was dropped across the landscape and on the prairies after the last retreat of the ice ten to twenty thousand years ago.

The mounds were formed by the deposition of soil above the loess horizon and concentrated in and around clumps of vegetation which, under desert conditions, grew in symmetrically rounded patterns. Soil was enriched by humus of non-woody plants. The tall grass prairies of the big and little blue stem, Indian grass, switch grass, and associated perennial forbs developed on this soil.

Soil samples were taken from the tops and bases of three rather evenly distributed mounds on both the Rice and Stump plots. Six samples from each plot were then analysed. There were no appreciable differences in the soil values of the samples of the two prairies (Table 1).

For the past seven years numerous trips were made during the blooming season so that the succession of bloom could be recorded and specimens identified and photographed. The blooming season typically extends from April 6 through September 25. However the records are incomplete because the prairies are mowed between July and middle August. In addition, severe spring and summer drought limited recovery in the mowed areas in the years 1970, 1971, and 1972.

Late blooming species of grasses and forbs were collected along the south boundary of the Stump Prairie which is traversed by an intermittent stream, and in an unmowed east-west ravine which bisects the Rice Prairie. Specimens were also collected along the railroad right-of-way between Gentry and Gravette.

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Table I. Soil Tests for Rice and Stump Prairies.
Figures represent Means with Ranges in parentheses.

	pH	% organic	lbs/ac P	lbs/ac K	lbs/ac Ca	lbs/ac Na	lbs/ac Mg
Rice	5.1 (4.7-5.5)	3.14 (2.6-3.55)	7.33 (5-10)	100 (85-105)	766.7 (350-1450)	75.8 (70-80)	169.2 (125-245)
Stump	5.1 (4.8-5.5)	3.25 (2.9-3.42)	6.0 (3-9)	105.8 (85-135)	741.66 (350-1200)	80. (70-90)	171.66 (130-240)

Tests by the Soil Testing and Research Laboratory of the Agronomy Department of the University of Arkansas.

Following is the species list for selected flowering plants listed in order of the succession of bloom in these remnant plots. Keys used for identification are: Fernald (1950), Hitchcock (1950), Smith (1972), Steyermark (1963), Tucker (1976). Specimens will be deposited in the herbarium of Arkansas Polytechnic College at Russellville.

S - Stump Prairie

Species collected April 6, 19, 27

- S-R *Luzula bulbosa* Ryd.
- S-R *Viola sagittata* Ait.
- S-R *Viola pedata* L. var. *lineariloba* D.C.
- S-R *Lithospermum canescens* (Michx.) Lehm.
- S-R *Pedicularis canadensis* L.
- S-R *Castilleja coccinea* Spreng.
- R *Comandra richardsoniana* Fern.
- S-R *Sisyrinchium campestre* Brickn.
- S-R *Ranunculus fascicularis* Muhl.
- S-R *Dodocatheon meadia* L.
- R *Astranthium integrifolium* Nutt.
- S-R *Corydalis crystallina* Engelm.
- S *Ranunculus laxicaulis* Darby
- S-R *Kirigia dandelion* Nutt.
- R *Baptisia leucophaea* Nutt.
- S *Galium obtusum* Rigel.
- S-R *Camassia scilloides* (Raf.) Benth.

Species collected May 27 - 30

- S-R *Rosa carolina* L.
- R *Rosa setigera* Michx.
- S *Psoralea psoraloides* Cory, var. *eglandulosa* F.L. Freeman
- S-R *Oenothera fruticosa* L., var. *linearis* S. Watts
- S-R *Oenothera linifolia* Nutt.
- S-R *Hypoxis hirsuta* Coville
- S-R *Lobelia spicata* Lam.
- S *Calopogon pulchellus* R. Br.
- S-R *Habenaria lacera* Lodd.
- S-R *Petalostemon purpureum* (Vent.) Rydb.
- S-R *Petalostemon candidum* (Wild) Michx.
- S-R *Linum striatum* Walt.
- S-R *Linum medium* Britt., var. *texanum* Fern.
- S-R *Linum sulcatum* Riddell

Species collected June 13 - 21

- S-R *Dianthus armeria* L.
- S *Drosera brevifolia* Pursh.
- S-R *Coreopsis grandiflora* Hogg
- S-R *Coreopsis palmata* Nutt.
- S-R *Coreopsis tripteris* L.
- S-R *Schrankia uncinata* Willd.
- S-R *Erigeron strigosus* Muhl.
- S-R *Achillea millefolium* L.
- S-R *Tradescantia ohioensis* Raf.
- S *Penstemon digitalis* Nutt.
- R *Penstemon tubaeformis* Nutt.
- S *Polytaenia Nuttallii* D. C.
- S-R *Delphinium carolinianum* Walt.
- S *Aletris farinosa* L.
- S-R *Amorpha fruticosa* L., var. *oblongifolia* Palmer
- S-R *Amorpha canescens* Pursh.
- S-R *Ceanothus ovatus* Desf.

R - Rice Prairie

RR - railroad right-of-way

- S-R *Caenothus americanus* L.
- S-R *Tephrosia virginiana* Pers., var. *holosericea* T & G.
- S-R *Polygala sanguinea* L.
- S *Circuta maculata* L.
- S-R *Ptilimnium nuttallii* Britt.
- S-R *Helenium flexuosum* Raf.
- S *Xyris torta* Sm.
- S-R *Verbesina helianthoides* Michx.
- R *Bifora americana* (DC.) Benth. & Hook.

Species collected in July

- R *Potentilla arguta* Pursh.
- S-R *Asclepias hirtella* (Pennell) Woodson
- S-R *Asclepias stenophylla* Gray
- S-R *Asclepias viridiflora* (Raf.) Eat.
- S-R *Eryngium yuccifolium* Michx.
- S-R *Silphium laciniatum* L.
- S-R *Silphium integrifolium* Michx.
- S *Agave virginica* L.
- S *Verbena hastata* Moldenke

Species collected in August

- S-R *Liatris pynostachya* Michx.
- S-R *Liatris aspera* Michx.
- S-R *Helianthus laetiflorus*, var. *rigidus* (Cass.) Fern.
- S-R *Helianthus mollis* Lam.

Species collected August & September

- S-R *Helianthus tuberosa* L.
- S *Rhexia interior* Pennell
- R *Aster ptarmicoides* (Nees) T. & G.
- S *Aster paludosus* Ait. subsp. *hemisphericus* (Alex.) Cron.
- S-R *Spiranthes cernua* (L.) Richard
- S *Gaura biennis* L.
- S *Lythrum lanceolatum* Ell.
- S *Hydrolea ovata* Nutt.
- RR *Apochynum androsaemifolium* L.
- S-R *Echinacea pallida* Nutt.
- S-R *Oenothera linifolia* Nutt. (April thru August).
- S *Ptilimnium Nuttallii* (DC.) Britt. Mock
- RR *Silene regia* Sims
- RR *Hieracium longipilum* Torr.
- S *Solidago rigida* L.

Tall Grasses

- S *Cinna arundinacea* L.
- R *Tripsacum dactyloides* L.
- S-R *Andropogon scoparius* Michx.
- S-R *Andropogon gerardi* Vitman
- S-R *Panicum virgatum* L.
- S-R *Sorghastrum nutans* (L.) Nash.
- S *Spartina pectinata* Link.
- S *Leersia oryzoides* (L.) Sw.

General Notes

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A CONTINUATION OF SPIDER RESEARCH IN ARKANSAS: OUACHITA MOUNTAIN AREA

For the past ten years, research has been pursued concerning the spider fauna of Arkansas (Dorris, 1968; 1969; 1970; 1971; 1972). At the present time, 206 species of spiders have been reported for Arkansas. This study revealed 99 species, 27 of which were new for the state. This is the first of a series of studies which will include a total of 6 areas: Ozark Mountains, Arkansas River Valley, Ouachita Mountains, Gulf Coastal Plain, Delta, and Crowley's Ridge. Prior to this study spiders had been collected at random throughout the state with greater concentration within the vicinity of Clark County. The purpose of this study is to determine the spider fauna of the Ouachita Mountain area of Arkansas. Eventually, when all areas are covered, the spider fauna of the entire state of Arkansas can be ascertained in relation to distribution.

Several methods of collecting were used in the Ouachita Mountain Area. They were (a) a heavy duty sweep net to sweep grasses and heavy brush, (b) a wire mesh sieve to sift spiders from leaf litter, (c) hand picking from trees, bushes, ground and old dwellings or other related places, and (d) mud-dauber nest collections to reveal paralyzed spiders captured by mud-daubers. Collections were made primarily between the hours of 9 a.m. and 3 p.m. since this is the time indicated by most authorities to be the period of greatest activity.

The spiders collected were placed in screw cap bottles with 70% ethyl alcohol. A field book was kept to identify bottle numbers and check stations and to record other pertinent data.

For complete coverage of the Ouachita Mountain Region, check stations were set up in the eastern, central and western sectors of the area. These check points were covered from July through December with appropriate collecting methods being used. Each main station was checked three or more times during this period to insure complete coverage, and sub-stations were checked one to three times (Figure 1).

Names used are those employed by Comstock (1948), Kaston and Kaston (1953), and Gertsch (1949). The arrangement followed is that of Kaston and Kaston (1953).

A total of 22 families, 69 genera, and 99 species were collected in the Ouachita Mountain Area with 27 new species being added to the state record (Table 1).

Table 1. Data Concerning Spider Collections Made in Ouachita Mountain Area.

Taxon	Date	**Station Code	***Collecting Code	Habitat	Taxon	Date	**Station Code	***Collecting Code	Habitat
Theraphosidae (Tarantulas)					Xysticus triguifidus Keyserling	7/17	C-2	SN	Field
Dugesiella hentzi Walckenaer	10/1	C-5	P	Roadside	Xysticus gulosus Keyserling	10/2	C-2	S	Forest
Scytodidae (Spitting)					Xysticus fumatus Keyserling	8/28	C-4	SN	Forest
Scytodes thomasi (Latreille)	8/9	E-1	P	Building	Synema parvula (Hentz)	7/17	C-1	SN	Field
Loxoscelidae (Recluses)					Philodromus parvulus Blackwell	8/28	C-4	SN	Forest
Loxosceles reclusa Gertsch & Mulaik	8/9	E-1	P	Building	Philodromus embiculus Keyserling	10/2	C-2	S	River
Lysomanidae (Green Jumpers)	10/2	C-2	P	Building	Thanaos formicinus (Clerck)	7/25	E-1	SN	Roadside
Lysomanes viridis Hentz	7/17	C-2	SN	Field	Tmarus angulatus (Walckenaer)	9/25	W-1	P	Forest
Amurobiidae (Narrowbellies)					*Tibellus dulcini (Hentz)	7/17	C-2	SN	Field
*Titaneca americana Emerton	8/28	C-4	S	Forest	Salticidae (Jumping)				
Uloboridae (Feather-legged)					Phidippus whitcombii Peckham	8/9	E-1	P	Building
Hydrotus catus (Hentz)	11/25	W-4	P	Forest	Phidippus catus Keyserling	7/25	E-1	SN	Roadside
Dictynidae (Cribellate)					Paraphidippus marginatus (Walckenaer)	7/17	C-2	SN	Field
Dictyna volucris Keyserling	10/2	C-2	S	Forest	Metaphidippus galathea (Walckenaer)	7/17	C-1	SN	Field
Oonopidae (Bosc)					Metaphidippus protervus (Walckenaer)	7/17	C-1	SN	Roadside
Oonops bilineatus (Hentz)	9/5	W-1	S	Forest	*Habrocestum pulchrum (Hentz)	11/25	W-5	P	Forest
*Sargolus formosus Chamberlin	7/17	C-1	SN	Field	Zygoballia bellina Peckham	7/17	C-2	SN	Field
Telocia laticus (Barrow)	7/17	G-1	SN	Field	Zygoballia bellina Peckham	7/25	E-1	SN	Roadside
Clubionidae (Club Footed)					Zygoballia bellina Peckham	8/28	C-4	SN	Forest
Clubiona abbotii Koch	8/28	C-4	SN	Forest	Zygoballia bellina Peckham	7/17	C-1	SN	Field
Chiracanthium incanum (Hentz)	9/4	W-4	SN	Roadside	Agassia cyanea Hentz	7/17	C-1	SN	Field
Clubiona obscura Hentz	7/25	E-1	SN	Roadside	*Myrceia pubes Peckham	9/4	W-4	SN	Roadside
*Phanacanthus borealis (Emerton)	9/5	W-1	S	Forest	Maipissa undata (DeGeer)	7/17	C-2	SN	Field
*Phanacanthus borealis Emerton	9/25	W-1	S	Forest	Maipissa undata (DeGeer)	9/5	W-1	S	Forest
Ctenidae (Wandering)					Myrmecarchaea hentzi Banks	9/5	W-2	SN	Field
*Ctenus hibernicus (Hentz)	9/25	W-1	P	Forest	*Phlegma fasciata (Hahn)	10/2	C-2	S	Forest
Thomisidae (Crab)					Phlegma fasciata (Hahn)	8/28	C-4	SN	Forest
Misumenoides formicipes (Walckenaer)	7/17	C-2	SN	Field	Habronattus coronatus (Hentz)	7/17	C-2	SN	Field
Misumenops appendiculatus (Hentz)	9/4	W-4	SN	Roadside	Habronattus coronatus (Hentz)	8/28	C-3	P	River
Misumenops appendiculatus (Hentz)	9/5	W-2	SN	Field	*Habronattus borealis (Hanks)	10/2	C-2	S	Forest
Misumenops appendiculatus (Hentz)	7/17	C-1	SN	Field	Habronattus decoratus (Blackwell)	7/17	C-1	SN	Roadside
Misumenops appendiculatus (Hentz)	7/17	C-2	SN	Field	Agelenidae (Globe)				
Misumenops appendiculatus (Hentz)	7/17	C-4	SN	Roadside	Agelenopsis parva (Walckenaer)	9/25	W-1	P	Forest
Misumenops celata (Hentz)	8/28	C-1	SN	Field	Cornus medicinalis (Hentz)	8/28	C-4	S	Forest
Misumenops oblongus Keyserling	8/28	C-4	SN	Forest	Cornus medicinalis (Hentz)	9/25	W-1	P	Forest
*Coslatichne venosus Keyserling	8/9	E-1	P	Building	*Cecus robustus Simon	9/25	W-1	S	Forest
Xysticus bicinctus Keyserling	7/17	C-2	SN	Field		11/25	W-3	P	Forest